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Prospective teachers' opinions on the value of PowerPoint presentations in lecturing

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Abstract

This study examines the prospective teachers' opinions of the PowerPoint presentations used in their courses in order to identify which factors students are pleased with and those which could be improved, and thereby the results of the study is providing an insight into the future use of PowerPoint presentations for academics. Participants were 684 prospective teachers enrolled at four universities in Turkey. Prospective teachers expressed partially positive opinions of the designs of PowerPoint slides and the contribution made to learning by the general use of PP presentations in their courses and furthermore, there was a significant difference between the departments.

Keywords: PowerPoint presentations; prospective teachers; lecturing.

1. Introduction

The dramatic global transition from industrial age to information age brings with it both new opportunities for universities and problems that need to be solved. In developing countries, universities have important roles in preparing students and societies for keeping up with current developments. Therefore, information technologies should be utilized in universities, in order to meet the requirements of the rapidly developing world and to increase the efficiency and the quality of the education provided. It should not be forgotten that higher education, with its knowledge and scientific potential, is essential for other institutions and national programs in an information society, and that it is the starting point for applying new information technologies within a society (Matveyev & Zhuravlyov, 2001).

Although many teaching methods are being discussed for university students, lecturing on a topic has always been indispensible. While lecturing, in order to emphasize the basic points, a range of technology has been used, from blackboards and overhead projectors to white boards or videos. In the last 10 years, electronic technologies have been used for presenting visual information in courses such as data projectors with computers. Programs used with these technologies are mostly PowerPoint (PP). Nowadays, there are special classes in many universities and high schools, equipped with the necessary technology to allow instructors to present relevant information to students

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through PowerPoint presentations. Moreover, some administrators require academic personnel to use this method (Bartsch & Coben, 2003).

A PowerPoint presentation is a complex mixture of text, graphics, explanations, advanced software features and real-time interaction with the audience (Farkas, 2008). Programs such as PowerPoint allow for the preparation of organized, visually attractive, easily-remembered presentations for new age audiences/students. Stein (2006), Rocklin (1997) and Perry & Perry (1998) argued that PowerPoint supports the learning process of students and that students passively internalize the information they are taught.

Many studies have examined the effect of PowerPoint on motivation, self-efficacy and the academic successes of students, and many studies have compared PowerPoint with traditional classes. Different results have been reported in these studies. In their study on the effect of PowerPoint presentations on short-term and long-term memory, Nouri & Shahid (2005) found that the attitudes of students towards PowerPoint presentations were positive, and that PowerPoint presentations have an impact on short-term memory when designed appropriately; however, PowerPoint was found to have no impact on long-term memory of students. In a study carried out in Turkey, it was also seen that PowerPoint has a positive effect on the academic successes of students (Akdağ & Tok, 2004). In contrast, Rosenthal *et al*. (2003) compared classes using PowerPoint presentations with teacher centered classes, and found no statistically significant difference between the two methods according to students' academic success. Bartsch & Coben (2003) found that PowerPoint has a negative effect on students' exam performances, although students state that they learn more in the courses taught with PowerPoint. Susskind (2004) argued that the self-efficacy of students is high and their attitudes are positive in classes taught with PowerPoint presentations; however, PowerPoint has neither a positive nor a negative effect on students' academic success. A study done by Susskind (2009) also found that PowerPoint had a positive effect on the self-efficacy and attitudes of students; however, it had no effect on students' academic success. Moreover, Savoy, Proctor & Salvendy (2009) stated that PowerPoint presentations had a negative effect on information retention..

The literature includes studies that examined the opinions of students about the PowerPoint presentations used in their classes, as well as studies on the effect of PowerPoint on academic performance. In these studies, students were asked to assess the PowerPoint presentations used in their classes in terms of multimedia principles and efficient use. In this type of studies (Apperson, Laws & Scepansky, 2008; Frey & Birnbaum, 2002; Rickman & Grudzinki, 2000), both positive and negative opinions were stated. Students stated that they prefer key sentences to be written, and terms and definitions to be written in full text. Although the students stated a preference for texts that were supported by images, they wanted teachers to use slides for discussion purposes, and to avoid simply reading the text from the slides (Apperson, Laws & Scepansky, 2008). Students stated that they want teachers to use PowerPoint to present the course content in a clearer and better organized way, and to provide the opportunity, at any time, to review basic points that they may have missed during the course (Frey & Birnbaum, 2002).

PowerPoint presentations should be designed appropriately, in order to be able to support learning. Electronic presentation packages like PowerPoint allow the preparation of dynamic and innovative presentations, and make the presentation fun, as well as attracting the attention of the audience. The most important factor for an effective presentation is "preparing the presentation with an appropriate design" (Holzl, 1997).

Stein (2006) stated that the number of viewers, the environment and the title of the subject to be presented should be taken into consideration while preparing a PowerPoint presentation; each slide should contain not more than 25 words; if the speaker needs to add more text, this should be divided over several slides, or made available to the audience in printed form.

In a study with 1500 students by Rickman & Grudzinki (2000), students chose PowerPoint as the most efficient information technology tool, but also stated that they were not pleased with poorly designed presentations and being taught a course very rapidly.

Seaman (1998) stated that, when teachers present their presentations visually and distribute the slides to students as written materials, students can follow a course more easily and do not have difficulty in taking notes. It was reported that the colors used in presentations attract the attention of students, allowing them to organize contents more easily. Seaman found that the presentation of a text saves time for teachers; however, the time allocated for students to process information decreases. The learning objective should be known when choosing the items to be shown in presentations. Seaman argued that events are best presented in text form, and ideas are best presented with a sample.

Given that universities are the starting points for the application of new information technologies, the present study examined the prospective teachers' opinions of the PowerPoint presentations used in their courses. Accordingly the aim of the present study is to identify which factors students are pleased with and those which could be improved, thereby providing an insight into the future use of PowerPoint presentations for academics.

1.1. Problem Statement

This study was designed to explore the prospective teachers' opinions on the value of PowerPoint presentations in lecturing. The following research questions guided this study.

1.2. Sub-problems

1) Do the prospective teachers' opinions on slide layouts in the PP presentations vary in respect to their departments?
2) Do the prospective teachers' opinions on the use of texts in the PP presentations vary in respect to their departments?
3) Do the prospective teachers' opinions on the use of visuals in the PP presentations vary in respect to their departments?
4) Do the prospective teachers' opinions on the contribution of the PP presentations to learning vary in respect to their departments?
5) Do the prospective teachers' general opinions on the use of PP presentations in their courses vary in respect to their departments?

2. Method

2.1.Study Group

The study group comprised students from 4 universities within the provincial borders of Antalya, Ankara and Istanbul (Akdeniz University, Ankara University, Yıldız Technical University and Istanbul University). Participants were taken from all grade levels of courses provided by Faculties of Education, including Classroom Teaching, Preschool Teaching, English Teaching, Computer Education and Instructional Technology, Social Sciences Teaching, Education of Religion and Ethics and Primary School Mathematics Teaching Departments. The study was conducted between March and April 2008, during the 2nd semester of the 2007-2008 academic year. Table 1 and 2 gives the distribution of the students.

Table 1. Distribution of Male and Female Participants

Gender	Number	Percentage (%)
Female	369	% 53.9
Male	315	% 46.1
Total	684	% 100

The study group of the present research consists of 684 students. 53.9% of the participants were female and 46.1% were male.

Table 2. Distribution of Participants by Department

Department	Number	Percentage (%)
Classroom Teaching	99	% 14.5
Pre-school Teaching	47	% 6.9
English Teaching	165	% 24.1
Computer Education and Instructional Technologies(CEIT)	248	% 36.2
Primary School Mathematics Teaching	17	% 2.5
Education of Religion and Ethics	27	% 3.9
Social Sciences Teaching	81	% 11.8
Total	684	% 100

2.2. Scale

A Likert scale was developed by the researchers in order to collect data in the present research. The proposed scale was shown to 4 academicians who are experts in their fields, their criticisms were received and the scale was finalized. The Likert scale has a seven rating system to provide sensitive measurement. The scale was designed as shown in figure 1.

1 2 3 4 5 6 7
Not like me at all →→→ Very much like me

Figure 1. Likert Scale

Participants' answers to the survey articles were rated as 1-2-3-4-5-6-7. The average response rating for each question was calculated in line with the answers given by the students. In this process, the average value has a maximum value of 7 and a minimum of 1. It was determined that if the average value was between 7-5, it is interpreted as a "positive opinion"; if between 5-3, it was interpreted as a "partially positive opinion"; if between 3-1, it was interpreted as a "negative opinion".

For reliability, alpha coefficient was analyzed using Cronbach's Alpha and found to be á = .87. This shows that there is consistency among the answers given to the questions in the survey.

3. Results (Findings)

The first research question addressed the prospective teachers' opinions of the layouts of PP presentations used in their courses, in respect to their departments. The findings related to this question are given in Table 3.

Table 3: Average Ratings related to Slide Layout

Articles	$\bar{x}$
1. The layout and the design of a slide help me to understand a subject as a whole.	4.57
2. The layout and the design of a slide do not distract my attention during courses.	5.17
3. I can understand the important points about the subject from the layout and the design of a slide.	4.48
Total	4.74

As seen in Table 3, students generally expressed positive opinions about the layouts of the PP slides used in their courses. Students responded most positively to the article "The layout and the design of a slide do not distract my attention during courses" (Article 2), with an average rating of $\bar{x}$=5.17.

The data about whether the opinions of the students about slide layouts vary according to the department where they study are given in Table 4. Analysis of variance (ANOVA) showed there was a statistically significant difference (F=12.064, p=0<0.05) between the departments.

Table 4: ANOVA results related to Slide Layout

	Total Squares	**Sd**	**Average Squares**	**F**	**p**
Inter-groups	95.533	6	15.922	12.064	.000
Intra-groups	893.544	677	1.320		
Total	989.076	683			

The Scheffe test was performed to test for differences between departments regarding the layout of slides. As seen from Table 5 the Department of Education of Religion and Ethics (ERE) showed a difference from all other departments. The opinions of students in the Department of Education of Religion and Ethics ($\bar{x}$=5.93) were more positive than all other departments. When we examined the other departments averages the least positive opinion was expressed by the students of the Department of Computer Education and Instructional Technologies (CEIT) ($\bar{x}$=4.33). Other averages were generally similar to one another.

Table 5. Scheffe Test related to Slide Layout

Department	S	alpha = 0.05	
		1	2
CEIT	248	4.33	
Mathematics Teaching	17	4.68	
Classroom Teaching	99	4.80	
English Teaching	165	4.92	
Pre-school Teaching	47	4.99	
Social Sciences Teaching	81	5.00	
Education of Religion and Ethics	27		5.93
p		.237	1.000

The results for the students' opinions on the use of text in PP presentations used in their courses are given in Table 6.

Table 6. Average Opinion Scores related to the Use of Text

Articles	$\bar{x}$
4. The font sizes of the texts used in presentations do not make it difficult to read for me.	4.85
5. I think the length of the texts presented in one slide is appropriate.	4.03
Total	4.55

As seen from Table 6, students' opinions of the use of text in the PP presentations used in their courses are generally "partially positive". This means that students do not find the text use very properly.

Data on whether students' opinions on the use of texts vary according to the department where they study are given in Table 7.ANOVA showed a statistically significant difference (F=4.080, p=0. 0<0.05) between the departments.

Table 7. ANOVA Results related to the use of Text

	Total of Squares	sd	Average of Squares	F	p.
Inter-groups	39.737	6	6.623	4.080	.000
Intra-groups	1098.846	677	1.623		
Total	1138.583	683			

The Scheffe test was performed to test for differences between departments regarding the use of text in slides. As seen from Table 8, the most positive opinion was again expressed by students of the Department of Education of Religion and Ethics ($\bar{x}$=5,11). The least positive opinion ($\bar{x}$=4.17) was from students of the Department of Social Sciences Teaching. Opinions within the remaining departments were predominantly "partially positive".

Table 8. Scheffe Test related to the Use of Text

Department	S	alpha = 0.05
		1
Social Sciences Teaching	81	4.17
Pre-school Teaching	47	4.27
Classroom Teaching	99	4.31
CEIT	248	4.32
Mathematics Teaching	17	4.67
English Teaching	165	4.74
Education of Religion and Ethics	27	5.11
Sig.		.053

The results for the students' opinions on the use of visuals in PP presentations used in their courses are given in Table 9.

Table 9. Average Opinion Scores related to the use of Visuals

Articles	$\bar{x}$
6. The visuals used enable me to concretize abstract concepts.	5.13
7. The visuals used in slides increase my interest in a course.	4.92
8. I want more visuals to be used in slides (reversed)	2.52

9. The visuals used are related to the subject being taught.	5.40
Total	4.49

Students' opinions of the use of visuals in PP presentations indicate that most agreed with the article "the visuals used are related to the subject being told", with an average of $\bar{x}$=5.40. The least positive opinion was related to the article "I want more visuals to be used in slides", with an average of "$\bar{x}$=2.52". This finding shows that the students are satisfied with the amount of the visuals used in the PP slides.

ANOVA indicated a statistically significant difference between the departments (F=13.46; p=0.0<0.05) in terms of students' opinions on the use of visuals (Table 10).

Table 10. ANOVA Results related to the use of Visuals

	Total of Squares	sd	Average of Squares	F	p
Inter-groups	58.082	6	9.680	13.460	.000
Intra-groups	486.894	677	.719		
Total	544.977	683			

The Scheffe test was performed to test for differences between departments in terms of students' opinions on the use of visuals in slides (Table 11). The Scheffe test indicated that statistically there is a significant difference between the departments of CEIT and ERE from the point of wiev of the amount of visuals used in PP presentations.. The most positive opinion was again expressed by students in the Department of Education of Religion and Ethics, with an average of 5.23 besides the students in the Classroom Teaching and Social Sciences Teaching Departments although showed a statiscally significant difference from other departments. The CEIT department responded the least positive opinion between groups. The opinions within the other departments were predominantly "partially positive".

Table 11. Scheffe Test related to the use of Visuals

		Alpha= 0.05		
Department	S	1	2	3
CEIT	248	4.18		
English Teaching	165	4.48	4.48	
Mathematics Teaching	17	4.51	4.51	
Pre-school Teaching	47	4.57	4.57	
Classroom Teaching	99	4.67	4.67	4.67
Social Sciences Teaching	81		4.93	4.93
Education of Religion and Ethics	27			5.23
P.		.240	.370	.130

Students were asked about the contribution of the PP presentations to learning in their courses, the findings are given in Table 12.

Table 12. Average Opinion Scores related to the Contribution to Learning

Articles	$\bar{x}$
10. I understand courses better when a PP presentation is used.	4.82
11. The PP presentations used concretize the abstract concepts in a course.	4.95
12. PP presentations help me to direct my attention to a course.	4.60
13. The visuals used in the PP presentations help me to understand the content of a course	5.17
Total	4.88

In terms of the contribution to learning of the PP presentations used in their courses, students generally expressed a "partially positive" opinion, with an average of "$\bar{x}$=4.88". The most positive response was given to the article "The visuals used in the PP presentations help me to understand the content of a course", with an average of $\bar{x}$=5.17. This findings show that the students expressed the use of visuals in PP presentations. ANOVA indicated a statistically significant difference between the departments (F=15.798; p=0<0.05) in terms of students' opinions of the contribution to learning of the PP presentations used in their courses (Table 13).

Table 13. ANOVA Results related to the Contribution to Learning

	Total of Squares	sd	Average of Squares	F	Sig.
Inter-groups	163.495	6	27.249	15.798	.000
Intra-groups	1167.751	677	1.725		
Total	1331.246	683			

The Scheffe test was performed to test for differences between departments in terms of students' opinions on PP's contribution to learning (Table 14). According to the Scheffe test, the students in the CEIT department showed a significant difference from all other departments. It is seen that the students in this department indicated the least positive opinion with an average of $\bar{x}$=4.28

Table 14. Scheffe Test related to the Contribution to Learning

Department	S	Alpha = 0.05	
		1	2
CEIT	248	4.28	
English Teaching	165	5.02	5.02
Classroom Teaching	99	5.10	5.10
Mathematics Teaching	17		5.33
Pre-school Teaching	47		5.40
Social Sciences Teaching	81		5.48
Education of Religion and Ethics	27		5.75
p		.173	.293

The students' general opinions about the use of PP presentations in their courses are examined within the frame of the results from Table 15.

Table 15. Average Opinion Scores related to the Use of PowerPoint in Courses

Articles	$\bar{x}$
14. I prefer the whole course to be taught using PP presentations.	4.12
15. I prefer all lecturers to give courses using PP presentations.	4.68
16. PP presentations make a course more interesting.	4.73
17. I think that the lecturers using PP presentations are better prepared to their courses .	4.72
18. PP presentations do not cause a course to become routine.	4.46

Students' general opinions about the use of PP presentations were generally "partially positive". This means that prospective teachers do want their lecturers to use PP presentations in their courses because they agree that PP presentations make courses more interesting (16:$\bar{x}$=4.73, 18: $\bar{x}$=4.46) and they can follow the course more carefully. Moreover they agree that the lecturers using PP presentations are better prepared to their courses (17:$\bar{x}$=4.72).

4. Discussion, Conclusion and Recommendations

The quality of the PowerPoint presentations, which have been extensively used in universities in recent years, varies according to the instructors. The principles that need to be followed while preparing PowerPoint presentations are not well-known. Hence, presentations which are prepared without following the appropriate principles have a negative effect on learning. Although the present study was based on a survey of students at Faculties of Education, the findings are applicable to the principles of positive multi-media education in many subjects. While preparing the

response-scale, the design principles that need to be followed in PowerPoint presentations and the contribution of presentations to learning were taken into consideration.

Prospective teachers at different departments of Faculties of Education expressed partially positive opinions of the designs of PowerPoint slides and the contribution made to learning by the general use of PP presentations in their courses. Given this finding, it is thought that students who are training to become teachers think that the use of PP presentations in courses contributes to learning (4.88%); however, responses were limited to "partially" positive, due to the use of inappropriate slide designs by some educators. The most important finding at this stage was that, while few students from the Department of Computer Education and Instructional Technologies (CEIT)expressed a positive opinion, the majority of students from the Department of Education of Religion and Ethics expressed positive opinions. The relatively low opinions among the students from the Department of Computer Education and Instructional Technologies may be explained by the fact that students within this department know the principles for designing effective materials, due to courses such as Material Development Developing Coursewares letc.; they therefore have the ability to consciously criticize the PP presentations used in courses. Conversely, the relatively positive opinions among students from the Department of Education of Religion and Ethics may be explained by the fact that the courses in these departments are based on quite abstract concepts and PP presentations are an effective means to concretize these abstract concepts.

As a result of the present research, it can be concluded that prospective teachers' attitudes towards the use of PP presentations in their courses are positive; however, instructors need to take greater care in the preparation of slides.

The following recommendations were based on the results of the study:

1. University academics should be encouraged to use PP presentations in their courses.
2. University classrooms should be equipped with the necessary technical facilities for presenting lectures using PowerPoint.
3. It is advisable for instructors to pay attention to the use of text, visual aids and slide design.
4. Especially the departments based on courses with abstract/academic content are vitally advised to use PP presentations in their courses.

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